

October 8, 2003

MODIS sensor Working Group (MsWG) Summary

Attendance: Bob Barnes, Stuart Biggar, Vincent Chiang, Wayne Esaias, Bob Evans, Bruce Guenther, Gerhard Meister, Chris Moeller, Vince Salomonson, Junqiang Sun, Gary Toller, Jack Xiong, Eric Vermote, Zhengming Wan, Joe Esposito

Scheduled Items

Item 1 Instrument Status

Terra

SSR anomalies on day 2003267-268 (Sept. 24-25)

- JX) Two MODIS Solid State Recorder (SSR) supersets failed on day 2003267 causing data loss to occur during the 24 hour period between 2003267 and 2003268. In addition, two data granules were lost on day 2003273. The affected granules/scans can be easily identified by observing the 20 hours where time-stamp of dropouts occurred in plots of the BB temperature (kept at a fixed 290°K) against time. One MISR superset has been reassigned to MODIS bringing up the total number of MODIS supersets to 35 (two MISR supersets had previously been assigned to MODIS leading to a total of 36 supersets before this failure). In the event of future SSR superset failure, the MISR team will again be asked to donate supersets to MODIS).

SRCA spatial test data

- JX) SRCA data from recent spatial test calibrations is not consistent with earlier results. MCST is looking into this.

Aqua

The Aqua inclination maneuver was preformed on day 2003280 (Oct. 7).

Item 2 Calibration Issues

Aqua data reprocessing: ephemeris issue

- JX) On mission day ~450 (2003086 - March 27, 2003) a PGE03 software rotation (MxD03 issue) causes the jump in SD zenith and azimuth angles. The effect of the rotation can easily be seen by trending the MODIS elevation angle and a strong jump in the MODIS $\cos(\theta_{SD})$ where θ_{SD} is the zenith angle (polar angle) in the SD coordinate system. Around day 230±5 several events occurred (a PGE03 software rotation on day 2002235, the SD port door and screen (SDD/SDS) remained open from day 2002221 through 2002226, an unknown ephemerous anomaly occurred on day 2002225. The ephemerous anomaly can be seen as a shift in the declination angle (instrument coordinate system) where the center of the calibration sweet spot occurs (see handout/attachment containing charts of SD calibration peak(s) and trends of the angles and cosine).
- RW) There can be drifting due to the PGE03 software rotation (attitude change).
- WE) If the curves are aligned at a declination of 30°, what do the individual peaks do?
- JX) The sweet spot does not move left/right.
- Looking at m1 there are still some issues: were there ephemeris changes made by FDD that can cause residual ripple in the angle.

Strategy and schedule

JX) For Aqua m1, MCST suggests that a piece-wise smoothed (fitted) m1 be used. Also, suggest that a piece-wise smoothed SDSM degradation fit be used.

Terra m1 study

JX) Gene did a reverse ray trace study and found that traces can fall off the scan mirror. This indicates that the focal plane can see regions of the cavity and thereby be affected by earthshine.

SB) This would affect high contrast scenes. This was seen in ALI where fluctuations of the EV can be as much as 30% and wavelength dependent effects were apparent.

WE) Has modeling been done to correct this effect in ALI? Are there any reports?

SB) The reports may exist at GSFC (we should contact the ALI team to get the report(s) or find the report(s) location).

BB) What is Gene's status of the polarization study?

JX) No results yet. He is working on screen uniformity.

Around the Table

Participant: Robert Wolfe:

RW) Progress has been made on earthshine/stray light. More analysis would be useful on sweet spot declination position (earthshine effect(s)).

Also working on an algorithm to correct the BBR focal plane to focal plane effects.

CM) Will this data (results) be available to the science teams?

RW) The data (results) will be available.

Participant: Bob Evans:

BE) Would be nice to update L1B to include the temperature and other identified effects.

JX) MCST would do the update in a timely fashion.

BE) Miami would like to have the temperature data in the L1B product files.

JX) Will discuss this with Alice.

BE) Miami also sees a mirror side (ratio) change starting in September 2003.

Participant: Wayne Esaias:

WE) Hope to have the report on the Sept 15-16, 2003 workshop out soon.

Participant: Bruce Guenther:

BG) If there is a contribution from earthshine/stray light then modeling can be done to determine a correction.

Grp) Modeling would need to be preformed (ProE). The ProE model would have to be validated against flight data.

Next MsWG Meeting: October 22, 2003